BioMax Environmental
Environmental Consulting and Industrial Hygiene Services

Anal Report Mec'd 6/3/19 by DHS to BET

March 19<sup>th</sup>, 2009

Mr. Doug Button Deputy Director Real Estate Services Division 707 Third Street - 8th Floor West Sacramento, CA 95605

Letter Summary Report - Elevator Shaft Mitigation Procedures Department of General Services Board of Equalization Building 450 N. Street Sacramento, California

Dear Mr. Button,

As per your specified request, BioMax Environmental, LLC (BioMax) is pleased to provide the Department of General Services (DGS) with this letter summary report providing recommendations for elevator shaft mitigation procedures within Board of Equalization building (BOE) located at 450 N Street Sacramento, California. BioMax understands that these procedures have been specifically requested following the performance of a building wide inspection and assessment by DGS's selected contractor, LaCroix Davis, LLC (LCD) during which elevator shaft surfaces were visually inspected and where observations of moisture related impacts were noted. A summary of LCD's building inspection and assessment findings has been provided within their Final Report entitled California State Board of Equalization Building Assessment, dated February 25<sup>th</sup>, 2009 (Final Report). Applicable detail pertaining to the LCD assessment may be reviewed within the cited Final Report for further reference as necessary.

As applicable to the elevator shaft / pit areas noted within Executive Summary Section 6.3 of the LCD report, BioMax understands that LCD has provided the following statement under their report heading "Elevator Shaft/Pit Response" as follows:

• "Clean and encapsulate with antimicrobial paint/coating using a non containment strategy in combination with mass air flow control measures... subject to the ability to demonstrate an appropriate level of exposure control.\*"

The noted asterisk provides two report references to the Journal of Occupational and Environmental Hygiene.

Hence, based on the information provided within the Final Report as well as the recommended LCD response noted above, BioMax has been asked by DGS to provide specific recommendations for elevator shaft cleaning and encapsulation procedures. The primary goal of these task-specific procedures is to establish standard procedures, methods, and controls pertaining to the noted "cleaning and encapsulating" of elevator shaft wall structures within each of the high-rise, low-rise, and freight elevator shafts areas present within the subject building as directed by DGS.

These recommended procedures have been developed by Mr. Michael A. Polkabla, CIH, REA, of BioMax at DGS's direction in accordance with current microbial mitigation procedures and prudent protective control strategies. Mr. Polkabla has been certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene and holds the right to the designation "Certified Industrial Hygienist" (CIH) under certification number CP 7104. Mr. Polkabla is also certified by the California Environmental Protection Agency (Cal/EPA) as a Class I Registered Environmental Assessor (REA) under Cal/EPA certification number 05011.

Hence, BioMax has developed the following recommended procedures (at DGS's request), for appropriate consideration and implementation as needed. Please note that the following recommendations are intended to serve as a "roadmap" to the procedural and performance requirements pertaining to the application and implementation of this designated scope of work. Any reference to applicable regulatory requirements such as those mandated by the Local Fire Marshall and specific Cal/OSHA elevator operational requirements are hereby incorporated into these mitigation procedures by reference and will be performed under the supervision of competent local authorities and subcontracted professionals as so designated.

- 1. Selection of Mitigation Contractor and Elevator Maintenance and Management Contractor: A microbial mitigation contractor and elevator maintenance and management contractor should be selected to perform the activities specified in the procedures delineated within this scope of work. BioMax currently understands that DGS has contracted with JLS Environmental (JLS) to perform the cleaning and encapsulation application activities within the selected elevator shaft cavities and that a certified elevator management and operation contractor shall be identified to perform the required elevator safety management and physical operation during the performance of such activities.
- 2. **Summary of Proposed Activities:** Based on current information and direction provided by DGS, it is currently anticipated that elevator shaft "cleaning and encapsulation" shall be limited to the three passenger elevator shafts and additional freight elevator located within the main core of the subject building as follows:
  - East Shaft: Housing two elevator cars (1 & 2) servicing BOE Floors 1 through 11 (Low Rise)
  - Middle Shaft: Housing a bank of four elevator cars including two east elevators (3 & 4) serving the low rise areas of Floors 1 through 11 and two west elevators (5 & 6) servicing the high rise floors from 1 through 24

- West Shaft: Housing three elevator cars (7,8, & 9) servicing (High Rise) floors 1 through 24 on the western side of the structure
- Freight Elevator Shaft: Housing a single freight elevator car located on the southwestern segment of the building servicing all floors from the ground level to the Penthouse (25<sup>th</sup>) floor

Hence, the primary scope of work activities included within these procedures shall include the establishment of appropriate barriers and through mass air flow controlled ventilation measures within each of the above noted elevator shafts followed by a floor to floor shaft wall surface preparation and microbial "cleaning" with final application of an antimicrobial paint/coating onto elevator shaft wallboard material surfaces.

- 3. **Notification and Scheduling:** It is currently anticipated that work activities shall be performed during weekend hours only. Floor 23 will be routinely accessed and utilized by the mitigation team as part of the performance and maintenance of the ventilation strategy noted below. BOE personnel shall receive notification regarding the scheduling of all elevator shaft activities and shaft working locations throughout the performance of this scope of work.
- 4. Shaft Isolation and Life Safety Approval: Isolation of the selected elevator shaft cavity spaces shall be accomplished through the establishment of protective containment barrier systems and negative pressure ventilation systems as noted herein. It is currently anticipated that each elevator shaft noted in # 2 shall be individually isolated as a single unit wherein designated site workers shall sequentially access each shaft space and perform work activities as noted. The establishment of all protective barriers and ventilation controls shall be thoroughly documented by the site contractor, JLS. Such documentation shall also be provided to the State Fire Marshall for review as necessary. All elevator shaft-specific activities shall also receive regular and ongoing review and supervision by the designated elevator operation contractor to assure compliance with applicable Cal/OSHA regulatory requirements and elevator safety procedures as necessary.
- 5. Establishment of Localized Shaft Containment Barriers: Localized negative pressure containment barrier systems utilizing mass air flow control measures shall be sequentially established and maintained at each of the elevator shaft locations for the duration of the designated surface preparation cleaning and encapsulant application activities. Negative air pressure shall be maintained within each individual elevator shaft cavity throughout the vertical extent of the critical cavity space. Utilizing of High Efficiency Particulate Aerosol (HEPA) filtered "negative air machine" air control equipment shall be positioned on the 23<sup>rd</sup> floor and engineered so as to provide exhaust ventilation from the high rise shaft cavity areas. Exhaust air shall be vented to the outside environment through specially designed and manufactured portals mounted onto one or more of the western facing balcony door areas, as necessary. An adequate supply of filtered and non filtered intake air may also be provided through controlled areas where open elevator doors are established on the first and second

floors (as necessary) so as to allow an adequate supply of make-up air into the critical shaft containment. As a performance criteria goal, each shaft working space shall be designed to maintain a minimum air flow turnover rate goal of eight (8) air changes per hour. Negative air pressure will also be established and maintained within each of the established shaft containment system areas at a performance goal level of -0.02 inches of water pressure for the duration of mitigative activities, as feasible. Continuous pressure monitoring equipment shall be located on multiple floor access areas to record pressure readings for the duration of these scope of work activities.

- 6. **Elevator Shaft Access:** Elevator shaft access shall only be performed under the supervision of the contracted elevator operator team at designated entry and egress locations. It is currently anticipated that a single mitigation (JLS) worker and a single elevator operator shall be present on any single elevator car at a given time during all ongoing routine operations. A plastic floor cover and HEPA filtered vacuum equipment capable of the effective removal of particulate contaminants from tools and personal protective equipment shall be placed within each designated entry and egress elevator lobby area to be utilized by elevator shaft workers upon their exit from each car. It is currently anticipated that the 1<sup>st</sup>, 11<sup>th</sup>, and 23<sup>rd</sup> floors shall be utilized as designated entry and egress floor locations for these purposes. In the event of an emergency situation, required egress from each elevator shaft may be achieved during unforeseen emergency evacuation and/or building alarm events under the direction, control, and supervision of the selected elevator operator.
- 7. Elevator Shaft Safety and Protective Barriers: Safety barriers shall be installed at each open shaft doorway in accordance with current codes and safety requirements as applicable. BioMax currently understands that these requirements include the establishment of a hard physical barrier constructed at each "open" doorway at a height of 6 feet above floor level. All supplemental operational lock-out and tag-out devices and equipment shall also be established at designated entry, egress and control locations in accordance with Cal/OSHA codes and operating procedural requirements.
- 8. **Posting and Record Keeping:** During the performance elevator shaft entry, appropriate signage and warnings must be posted within the entry, egress, and ventilation portal areas leading to and/or from all controlled shaft areas. For these purposes, a sign-in log shall also be maintained at the designated entrances of each elevator containment area as well as immediately outside the primary floor access locations utilized by all entrant, operator, and inspection personnel who enter the designated controlled areas.
- 9. Containment Pressure Monitoring: Data logging monitoring equipment employed to record pressure differentials on a 24-hour basis shall be used for the duration of this project where functional critical barriers are established and in use. Such pressure monitoring devices shall utilize paper strip chart records to allow routine and regular inspection of pressure readings by the Project CIH and DGS project management personnel as necessary. The mitigation contractor shall establish such pressure monitoring equipment on multiple floor locations relative to each active elevator shaft cavity during the performance of all relevant shaft activities. The site contractor shall maintain these chart records and will

provide a weekly written summary of continuous monitoring levels for the duration of the project and upon request.

10. **Modifications to Barrier Systems:** Any smoke detectors and/or fire suppression systems present within elevator shaft containment systems shall NOT be covered nor rendered inoperable unless specifically authorized under the direction and supervision of the Fire Marshall and DGS building maintenance personnel. Once final containment parameters have been delineated and verified, the mitigation contractor shall maintain an "as built" record (both digitally and on site map records) of specific equipment locations and materials for further review and reference. BioMax is prepared to provide JLS with additional and ongoing detail pertaining to the establishment and maintenance of critical containment barrier systems, as necessary.

## 11. Establishment of Supplemental Air Scrubbing and Negative Air Machines:

Supplementing the existing negative air machines (designed to establish and maintain negative air pressure within each of the containment shaft systems) the supplemental use of HEPA filtered air scrubbing machines shall also be achieved within critical areas of adjacent work spaces within occupied elevator lobby floors during all forthcoming cleaning and encapsulation activities as necessary. At the direction of the Project CIH, such air scrubbing machines shall be established on the 11<sup>th</sup> and 23<sup>rd</sup> floors and oriented within and/or adjacent to various elevator lobby spaces and active entry/egress areas as deemed necessary by the Project CIH. Supplemental air scrubbing machines may also be placed within areas outside of the working and/or containment areas as an additional precautionary measure as necessary at the direction of the Project CIH.

- 12. Personal Protective Equipment (PPE): Personal protective equipment utilized by elevator shaft entrants during the performance of interior shaft activities shall include the use of hooded Tyvek coveralls, nitrile gloves (1-3 mil.), and NIOSH approved HEPA filtered (P100) full face air purifying respiratory protection (during cleaning/surface preparation activities) and half face air purifying respiratory protective devices (during encapsulant application) at a minimum. PPE requirements associated with area containment set up and equipment handling (prior to shaft entry) may utilize standard construction regimen including standard material clothing. Voluntary use of dust mask-type respiratory protection may also be utilized during these set-up activities by workers, inspectors and/or subcontractors only during non aggressive entry activities (including visual inspections and sampling) but is not applicable during the active surface preparation treatment, cleaning, and/or encapsulant application procedures where the noted higher protection factors for respiratory protection is required.
- 13. Fall Protective Devices and Training: Entry within elevator shaft cavities will require the use of ANSI approved fall protective devices in accordance with applicable Cal/OSHA and elevator-specific code requirements. During all such entry activities, workers must be equipped with and utilize fall protection devices in accordance with applicable worker protection regulations and fall protection guidelines mandated by federal, state and local requirements. It is the responsibility of each entrant and/or contractor to provide for their

- own fall protection, keep all records of such training, and to provide copies for inspection and review by the Project CIH and/or regulatory compliance inspectors as requested.
- 14. Elevator Shaft Wall Cleaning and Surface Preparation: Following the demonstrated performance and maintenance of appropriate ventilation and pressure differential as specified in these procedures, the mitigation contractor shall perform a detailed cleaning and surface preparation of all exposed and accessible wallboard shaft wall surfaces within the designated elevator shaft cavity. Surface cleaning shall employ the use of a series of HEPA filtered treatment and wipe methods specific and appropriate to the surface condition encountered. In general, surface cleaning shall be performed with the intent to remove and/or minimization the presence of visible moisture and/or mold-like staining on exposed wallboard material surfaces as well as to prepare the wallboard surfaces for appropriate adhesion by the selected encapsulant product. Utilization of sponge wipe methods, hand-held abrasive tools, and HEPA vacuum equipment with soft bristle brush attachments may be utilized by the mitigation contractor under review by the Project CIH. Application of a commercially available detergent (such as Simple Green) and/or mildicide cleaning solution (such as Foster's product) to aid in the cleaning procedure may be utilized on surfaces requiring such additional treatment and methods, as deemed necessary.
- 15. Adjacent Shaft Area Surfaces Clean-Up: During the performance of elevator shaft wall surface cleaning, adjacent surfaces accessible within the shaft area shall also receive the performance of a surface cleaning to remove the presence of accumulated dust and debris utilizing appropriate surface treatment procedures. Such methods shall be performed in an effort to only remove and/or minimize the presence of accumulated accessible debris and particle deposition as practicable. Following all physical surface preparation and cleaning noted in task 14 above, a detailed gross material clean up activity shall be performed by the mitigation contractor to remove any dislodged particulate debris utilizing applicable methods, procedures, and equipment. Such procedures and methods are currently anticipated to include HEPA vacuuming and/or wet-wiping methods as applicable in the removal of gross visible debris and materials associated with the wall/surface preparation activities noted.
- 16. Fire Proofing Overspray on Wall Surfaces: It is understood through previous elevator shaft wall inspection activities, that surfaces adjacent to those where fire proofing (FP) material had been previously applied, sometimes contain "overspray" deposits of varying degrees. It has been indicated to BioMax that these "oversprayed" wall surface areas were not originally designed or intended to receive the application of a fire proofing coating and typically exist as a two to five inch border adjacent to materials which were intended for direct FP praying. Therefore, FP overspray may be cleaned as part of the overall surface preparation activities performed prior to application of the encapsulant material so as to facilitate better encapsulant product adhesion by the selected contractor. Such "overspray" preparation of non essential surfaces may be achieved utilizing HEPA vacuuming with soft (non damaging) bristle brush attachments and/or physical removal with scraping tools and local HEPA filtered exhaust equipment as necessary.

- 17. Encapsulant Application: The application of an encapsulate paint/coating shall be performed by the mitigation contractor in accordance with the product manufacturer's use guidelines. It is currently anticipated that the use of Fosters 40-50 Mold resistant coating material (a "colored" non-translucent sealant product) will be utilized for these purposes. Use of a colored product has been specified so as to visually verify the locational extent and degree of material application as necessary. Any substitution of these selected products shall be made based on product performance criteria as well as a demonstrated low odor and emission formula. Any product selection revision decision shall be reviewed by the Project CIH, as applicable. It is currently anticipated that all elevator shaft interior wallboard surfaces shall receive the application of an encapsulant coating as per this scope of work utilizing hand rolling application techniques. The encapsulant is only intended to be applied to wallboard surfaces within the elevator shaft during the performance of these procedures. All other surfaces present within the elevator shafts shall not receive the application of an encapsulant sealant coating unless otherwise specified.
- 18. **Final Elevator and Elevator Lobby Clean-Up:** Following the performance of gross material clean up from surface preparation and encapsulant application methods, all elevator car interiors and lobby areas used as entry/egress areas shall be detail cleaned utilizing a combination of HEPA vacuuming and wet-wiping methods as applicable to the surface and materials in question. Local HEPA filtered air scrubbing machines may also be utilize during these area clean-up treatments as necessary.
- 19. **Post Mitigation Assessment:** Upon completion of encapsulation application efforts, the Project CIH shall perform a visual inspection to review and verify the continued integrity of the containment system performance as well as to verify sufficient evidence that that prescribed encapsulant application and clean-up efforts have been achieved. Once verified, the Project CIH shall collect a series of microbial "clearance" air samples within accessible shaft and elevator lobby areas to verify that all containment areas have been appropriately decontaminated to acceptable background airborne levels. Samples will be specifically collected and evaluated for microbial contaminants so as to establish that the treated elevator shaft areas and, most importantly, the elevator car areas are verified as "cleared" for forthcoming tenant use. Specific clearance criteria parameters utilized during this phase of assessment may utilize those criteria previously established by the Project CIH and approved by DGS and BOE as referenced in BioMax's procedures entitled Post Mitigation Clearance Assessment Protocols, dated February 15<sup>th</sup>, 2008. As part of this post mitigation "clearance" verification process, the provision of appropriate access for parallel inspection and review of sampling data and current site conditions shall be offered to BOE and their consultants.
- 20. Additional Activities: Reasonable additional assessment and mitigative measures may also be required upon the identification of new or previously undiscovered materials and/or information related to moisture/microbial impacts, as necessary. Any reoccurrence of moisture intrusion indicators and/or microbial contamination following the performance of these activities should certainly be reviewed and addressed through further professional consultation, as necessary.

BioMax believes that the recommended procedures outlined above are consistent with the mitigative control procedures and methods currently directed by DGS and established within the subject building. If you have any additional questions, comments, or require further assistance, please do not hesitate to contact our offices directly at (510) 724-3100.

Sincerely,

Michael A. Polkabla, CIH, REA

Mulanta folke

Vice President, Principal

## LIMITATIONS

Please note that the professional opinions presented in this review are intended for the sole use of DGS and their designated beneficiaries. No other party should rely on the information contained herein without the prior written consent of BioMax Environmental and DGS. The professional opinions provided herein are based on BioMax's review and understanding of current site information and observed site conditions present within the areas inspected at the time these services were performed. Professional recommendations provided as part of this limited scope of work are intended for client consideration only and are not intended as a professional or regulatory mandate. Implementation of any of the above measures or recommendations does not, in any way, warrant the day-to-day health and/or safety of building occupants, residents, site workers, nor regulatory or building code compliance status during normal and changing environmental conditions. As microbial contamination, by nature, may change over time due to additional moisture intrusion, favorable growth conditions, and changing environments, the findings of this report are subject to change in the event that such conditions and/or environments arise. Also, the professional opinions expressed here are subject to revision in the event that new or previously undiscovered information is obtained or uncovered.

The information contained in this and any other applicable report communication is intended for consideration purposes only. It is not intended, nor should it be construed as providing legal advice or warranting any level of safety or regulatory compliance. The sole purpose of such information is to assist with the identification, evaluation and control of potential contamination or unnecessary physical, chemical, and/or biological hazards. Any action taken based on this information, including but not limited to opinions, suggestions and recommendations, whether implied or expressed, is the sole responsibility of the individual taking the action. Risk management and safety is criteria dependent and situation specific requiring extensive knowledge and value assessments to be properly determined by competent professionals.

These services were performed by BioMax in accordance with generally accepted professional industrial hygiene principals, practices, and standards of care. Under the existing Industrial Hygiene Definition and Registration Act, all reports, opinions or official documents prepared by a Certified Industrial Hygienist (CIH) constitutes an expression of professional opinion regarding those facts or findings which are subject of a certification and does not constitute a warranty or guarantee, either expressed or implied.

Property of the control of the contr שיים וו פר שיים וויים מישה פרוך היה של ביון שיים ביון של ביים של ביון שיים ביים ביים ביים של ביים של ביים של ב ביים של ביים ש 19 Jer to the control of the few attitles and the control of the c Desirate will type of both sound breaktion and state.

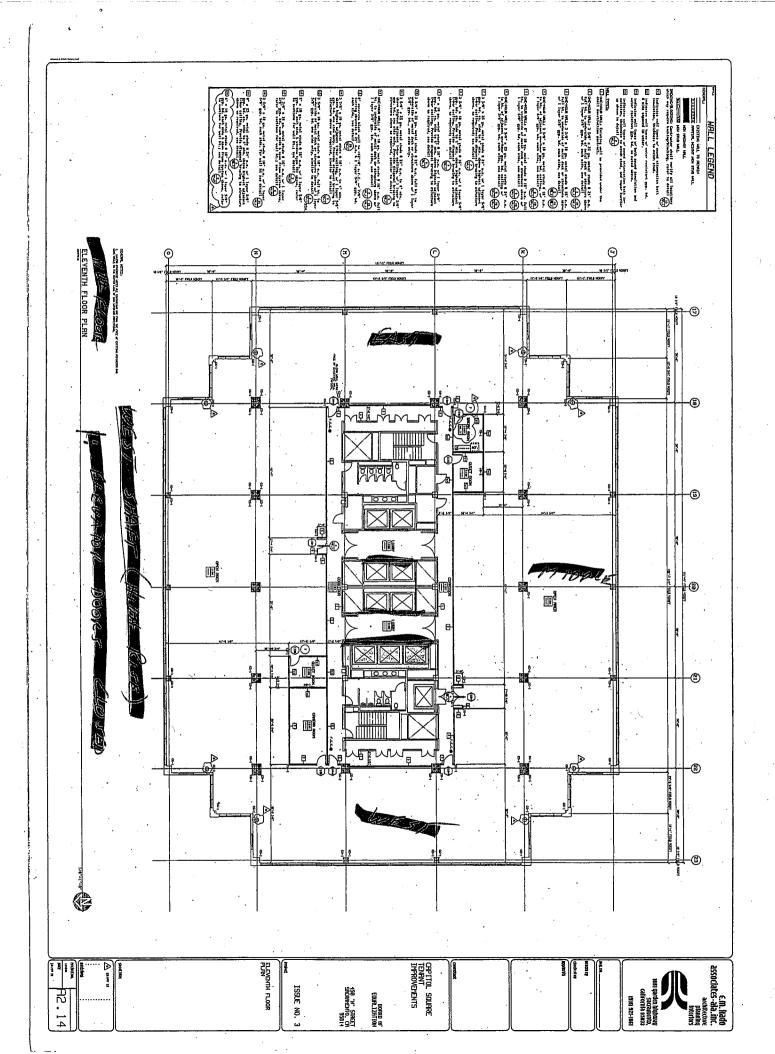
Desirate will type of sea of the date.

Desirate will have of season and sound or sea have been and season.

Desirate will be season and season and or sea have been season. E indicates will types of mater raciotust gyp. 14. 13 34" a 25 ps. mtsl stude 8 35" e.g. full ht. to suddereide of mest deat or structure them of 1 lapse 52" spr. he., and side mig. 13 54" a 21 qu. metal stude 8 21" a.a., w' i ityer 3 gyr. be. se. jida 14 a 1" ale., abore Alghest adjucat feat satisfaction dispension brains to structure above, as respired one satisfaction DECK.

DECIMA INC. Criming will as provided under the MALL LEGEND **(** DE WITH IN COURT OF A NO PERSON WE USE IN COURT OF COURTS OF COURT @ EHEMENTH FLOOR PLAN 1 ELF was Fine Downs 古 00 H167+ OPERA RUSE COSED **9** ELEVENTH FLOOR SHEETEN CAPITOL SOURRE TENANT IMPROVENENTS E.M. Hado associates-ala.inc. acaltecture phanning internors ISSUE NO. 450 'N' STREET SACROMENTO, CA 95814 A2.14 render bighway Sacramento, California esece BOYRD OF (916) 921-1661

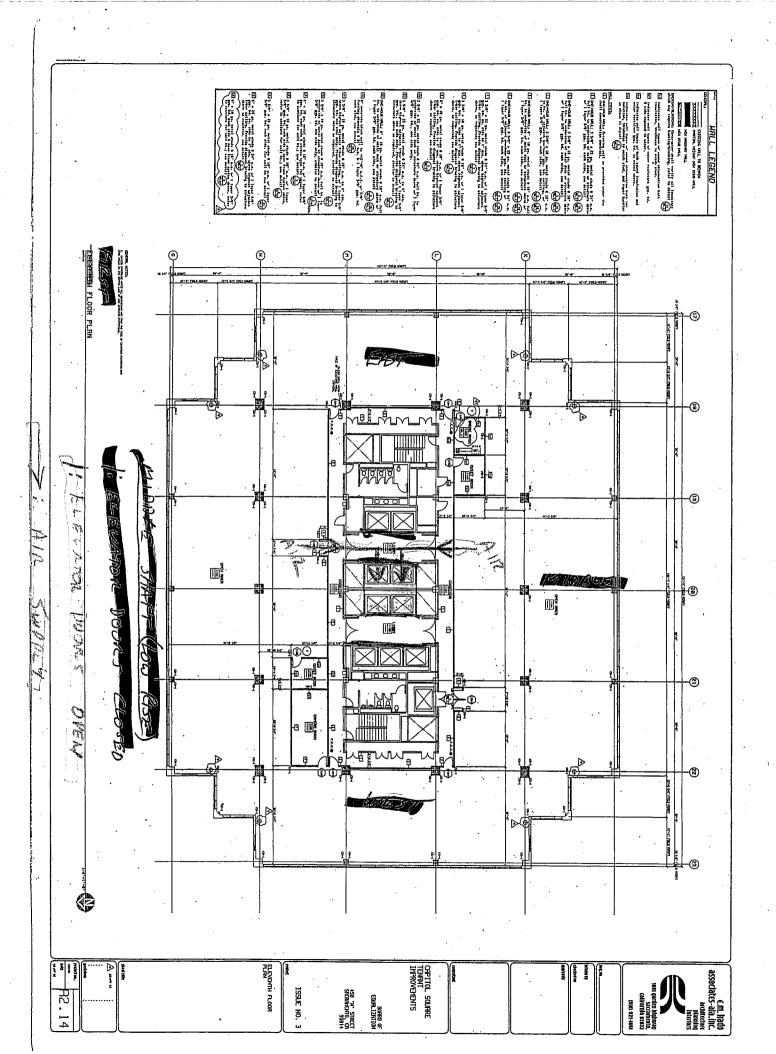
AIR FLOW

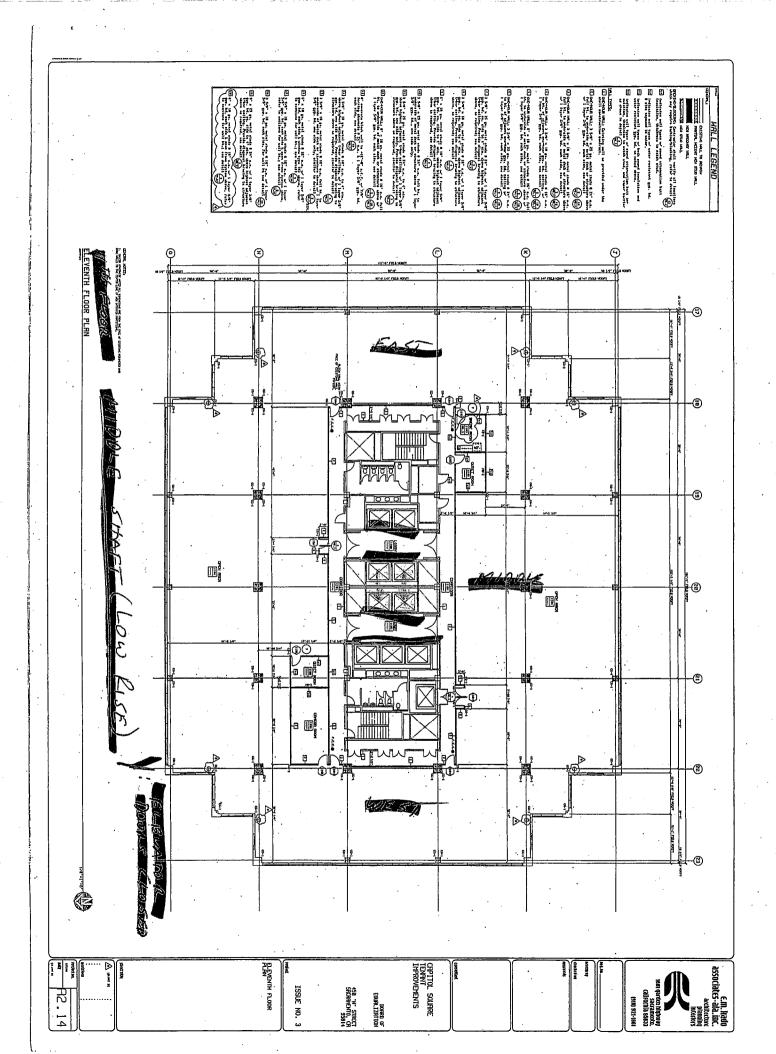


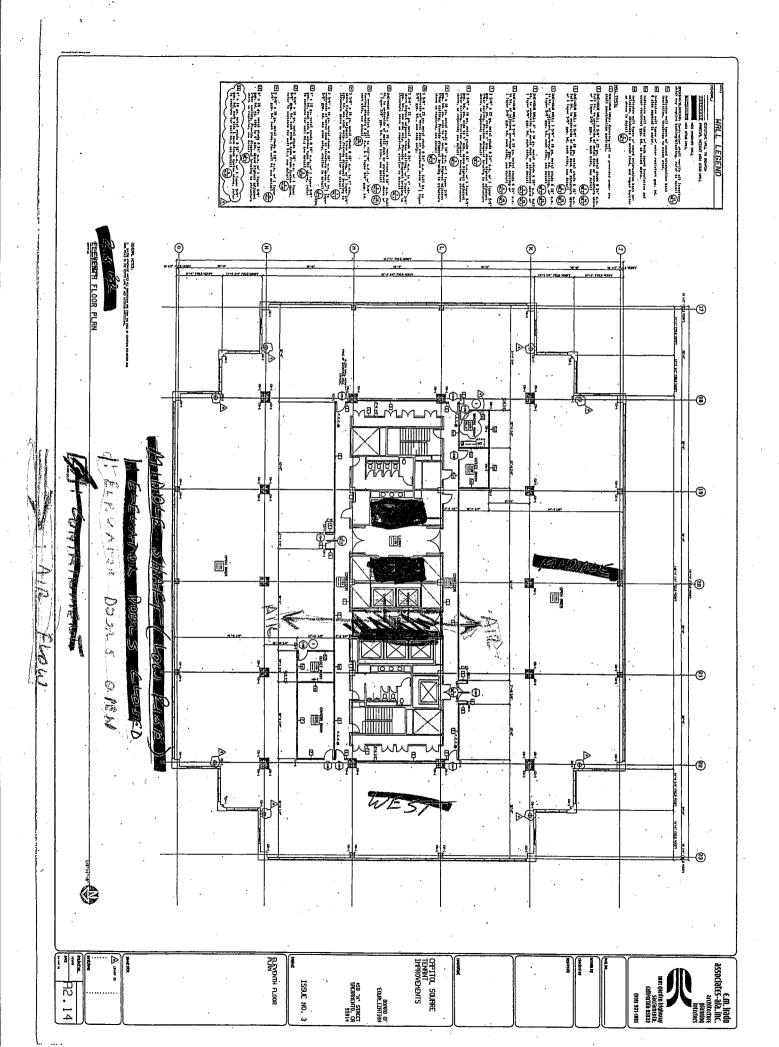
Becommend to the control of the cont Control of the contro E 3 50 mg. tel. sam rice. for tall at he detail 10 3 500 7 1 10 pt. mild inde a 15 mil 10 1 10m. Control and the first of the control indicates will types of sound attenuation batt low-E telle opine if you of wher resistant gps. No.

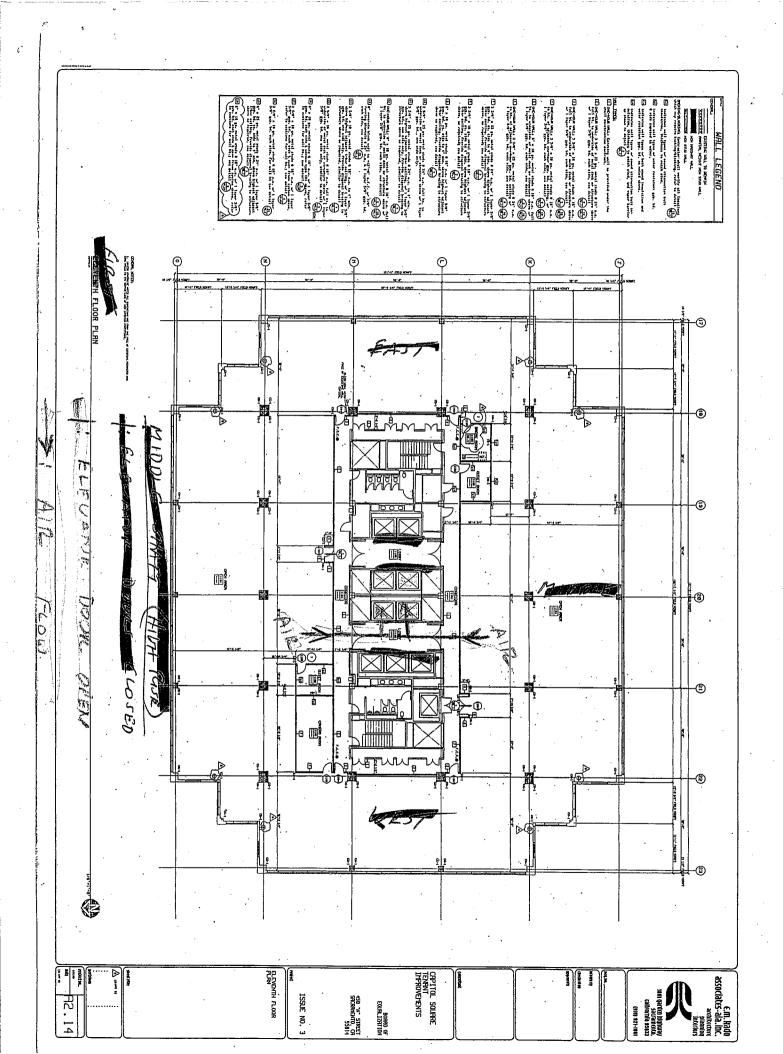
Ed telle opine if you of but model templation and
union resistant yps. Co. as noted damp. indicator well types of second attempation batt COMMENT OF THE ACT OF THE STREET OF THE STRE CISTIC MALLY NOTOL NOT SITE PATT A YON TAKED MAT. NOT. MALL LEGEND ELEVENTO FLOOR PLAN 1 1 7 FEE WAYS 2000 CLOSIED - 1 OPEN ELEVENTH FLOOR D Sagar CAPITOL SOURCE TENANT IMPROVEMENTS E.M. Hado associates-aia.inc. architecture planning interiors ISSUE NO. 3 H2.14 458 "N" STREET SHCRRNENTO, CA 95814 n qarden highway SaCramento, California 151133 California 1521-1661 EQUALIZATION

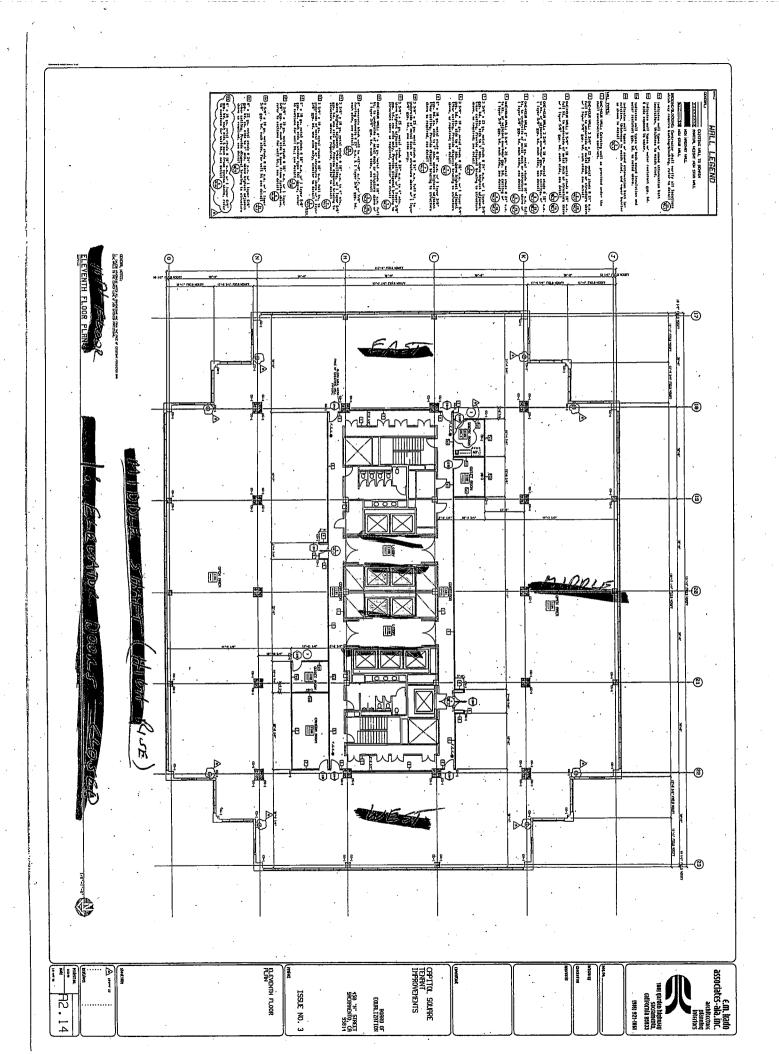
ATT FLOW

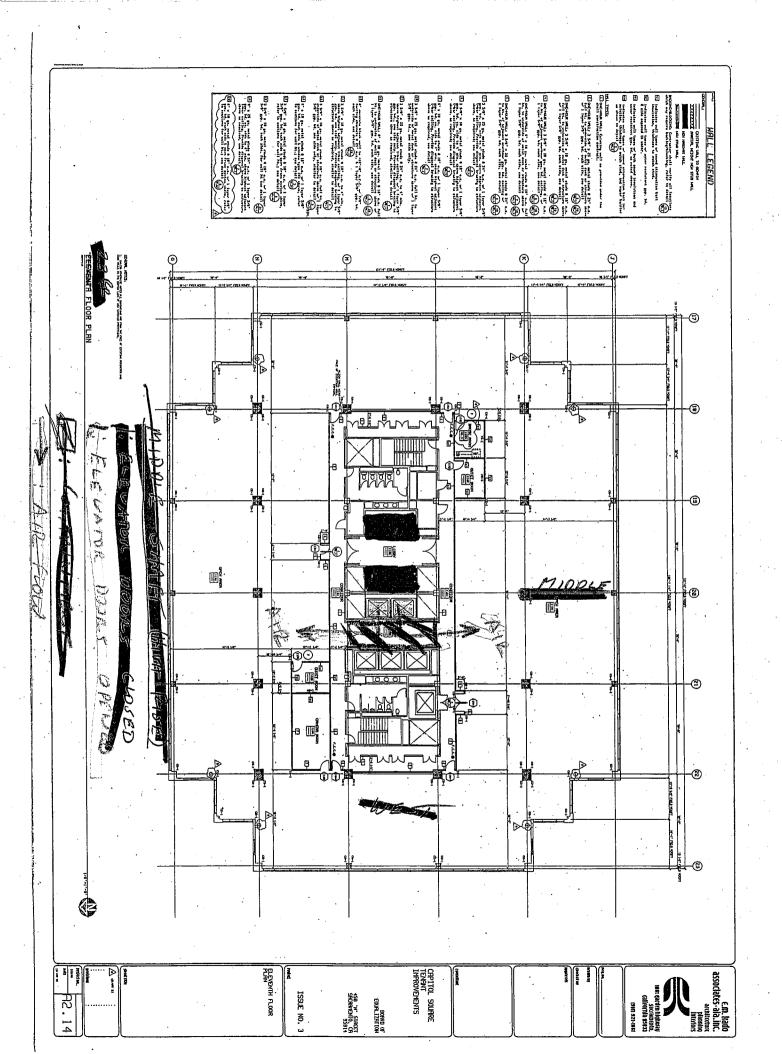


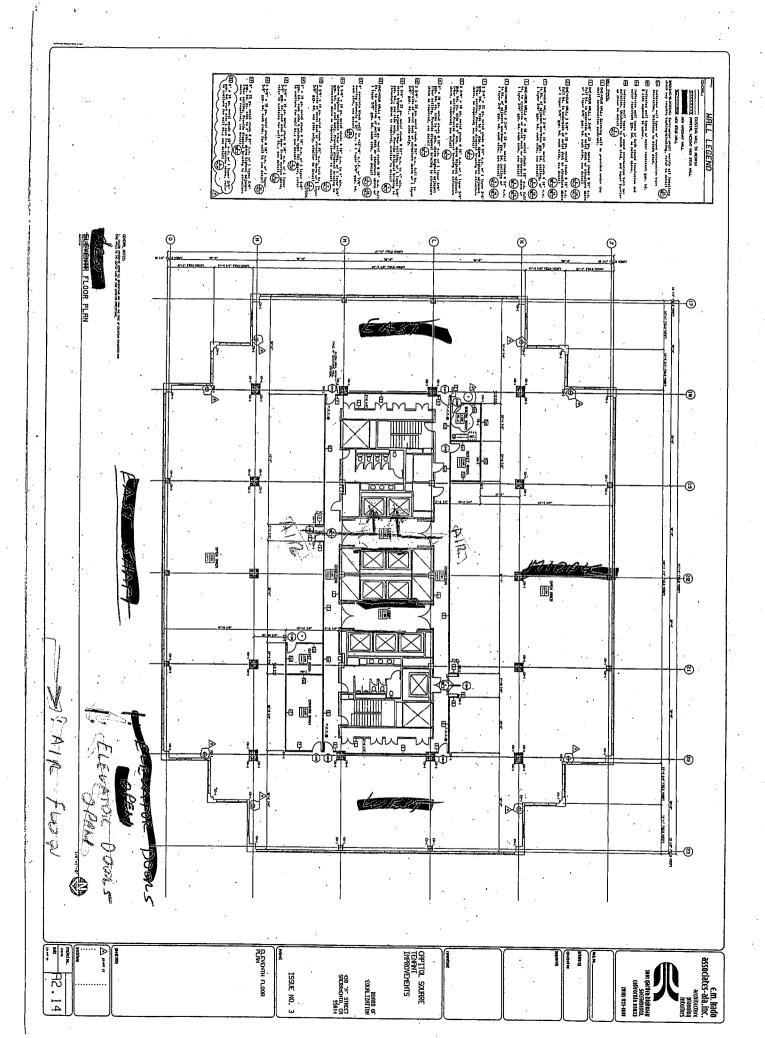


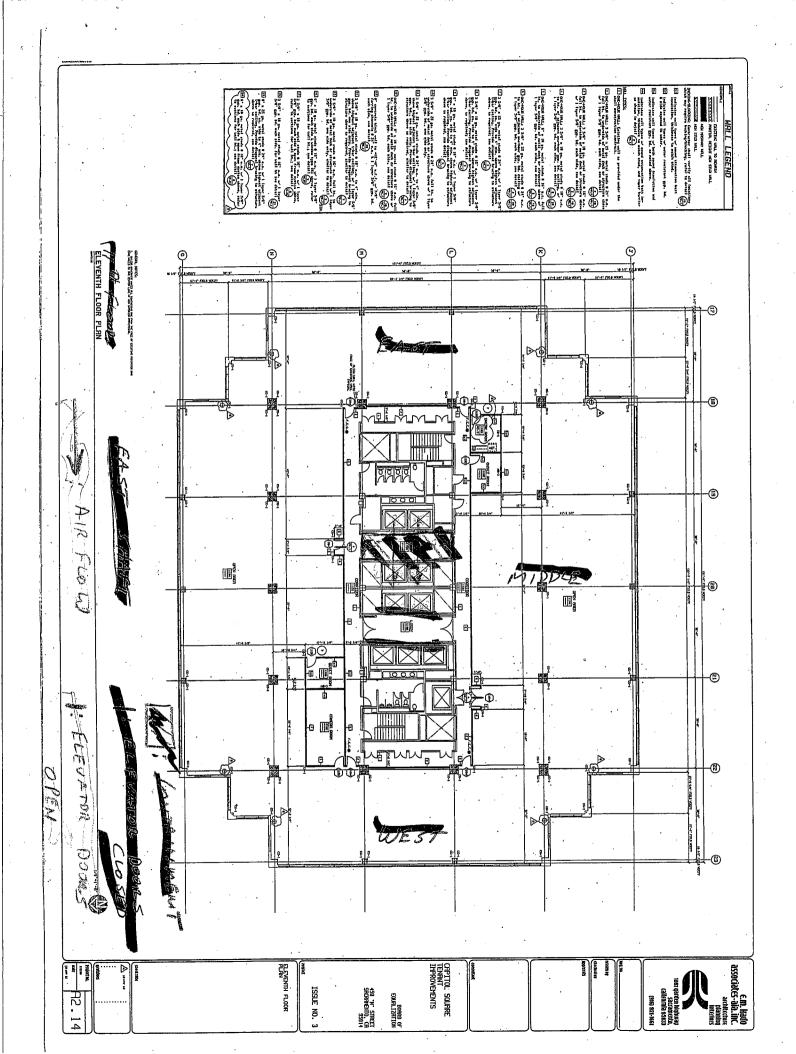












Becommend of the property of t wallester will types of second extension but I probabilities, thinkester to with study and type? burdles to have it deptil Egger, let un ila facult ne and entife CONTRACTOR CONTRACTOR OF THE ACT DECEMBER CHAINE CONTRACT OF PROPERTY OF THE PR AT THE MENT OF THE STREET OF T indicates will types of bath sound invulation and water resistant type 64, as noted where, Andiestes will types wy unter restricted gyp. 1d. B alda aspesed to uster. itaton will typen of newed attravetion batt itation, thickness to natch etvel, **HALL LEGEND** THE DOOR DOOR OFFI CALIMIN MEAT -c 🏬 ELEVENTH FLOOR tt auet 🛇 CAPITOL SOURRE TENANT IMPROVEMENTS E.M. Hado associates-aia.inc. architecture planning interiors 150 'N' STREET SACRAMENTO, CA 95614 H2.14 ISSUE NO. 3 EOURLIZATION OF qarden hiqatoray sacramento, california ascosa (310) \$21-186